

Fig. 1

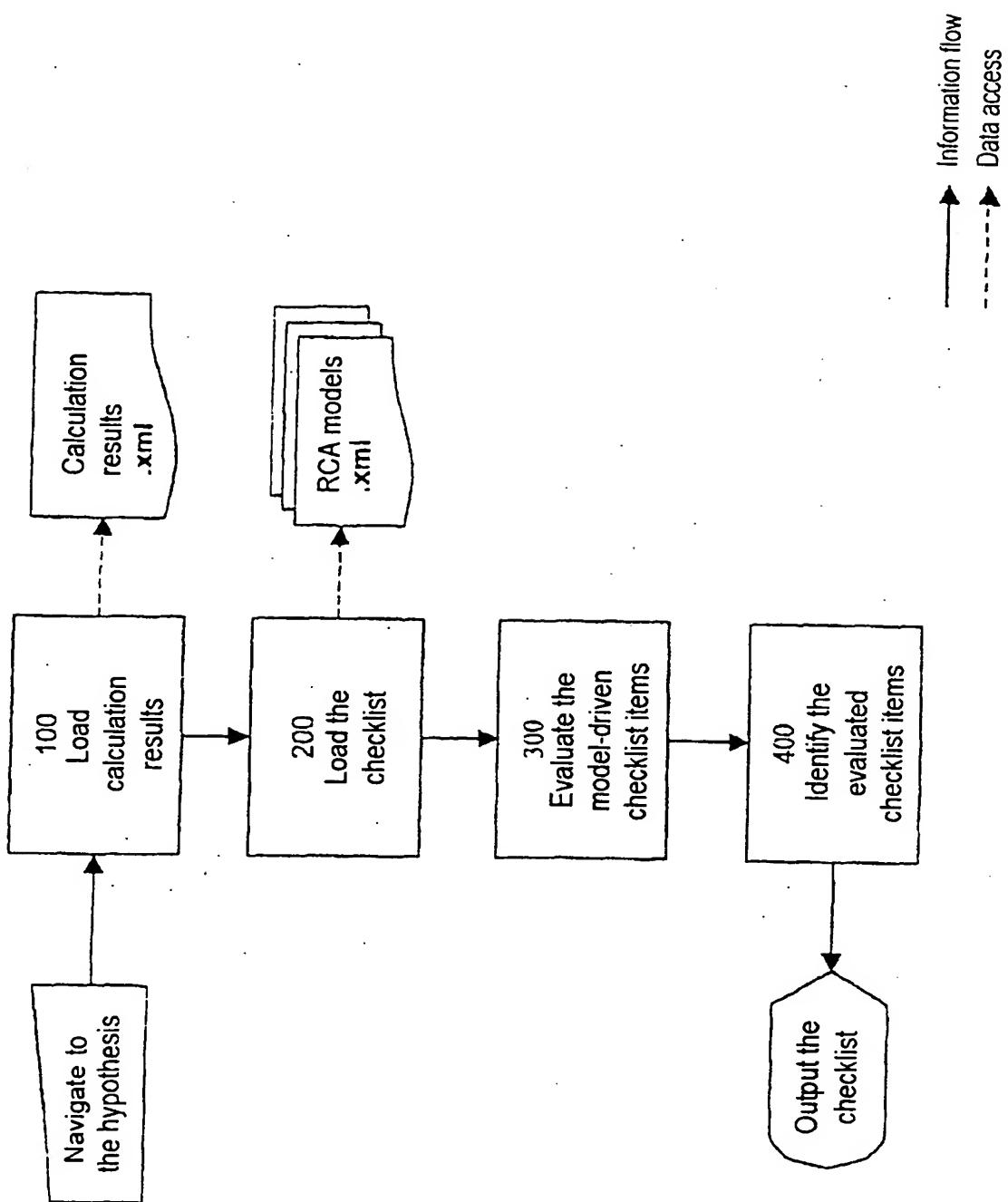


Fig. 2

$$\left\{ \begin{array}{l} \frac{dV}{dt} = F_i - F_0 + F_0 f_1(t) \\ \frac{dT}{dt} = \frac{F_i}{V} (T_i - T) - \frac{k_0}{\rho_0 C_p} \Delta H e^{-\frac{E}{RT}} C_A - \frac{U A (T - T_{j,0})}{\rho_0 C_p V} + G(T, C_A) f_1(t) \\ \frac{dC_A}{dt} = \frac{F_i}{V} (C_{A,i} - C_A) - k_0 e^{-\frac{E}{RT}} C_A + \frac{F_0}{V} f_2(t) \\ \frac{dT_{j,0}}{dt} = \frac{F_j}{V_j} (T_{c,i} - T_{j,0}) + \frac{U A}{\rho_j V_j C_j} (T - T_{j,0}) \end{array} \right.$$

where

$$G(T, C_A) = \left[ \frac{k_0}{\rho_0 C_p} \Delta H e^{-\frac{E}{RT}} C_A + \frac{U A (T - T_{j,0})}{\rho_0 C_p V} \right]$$

Fig. 3

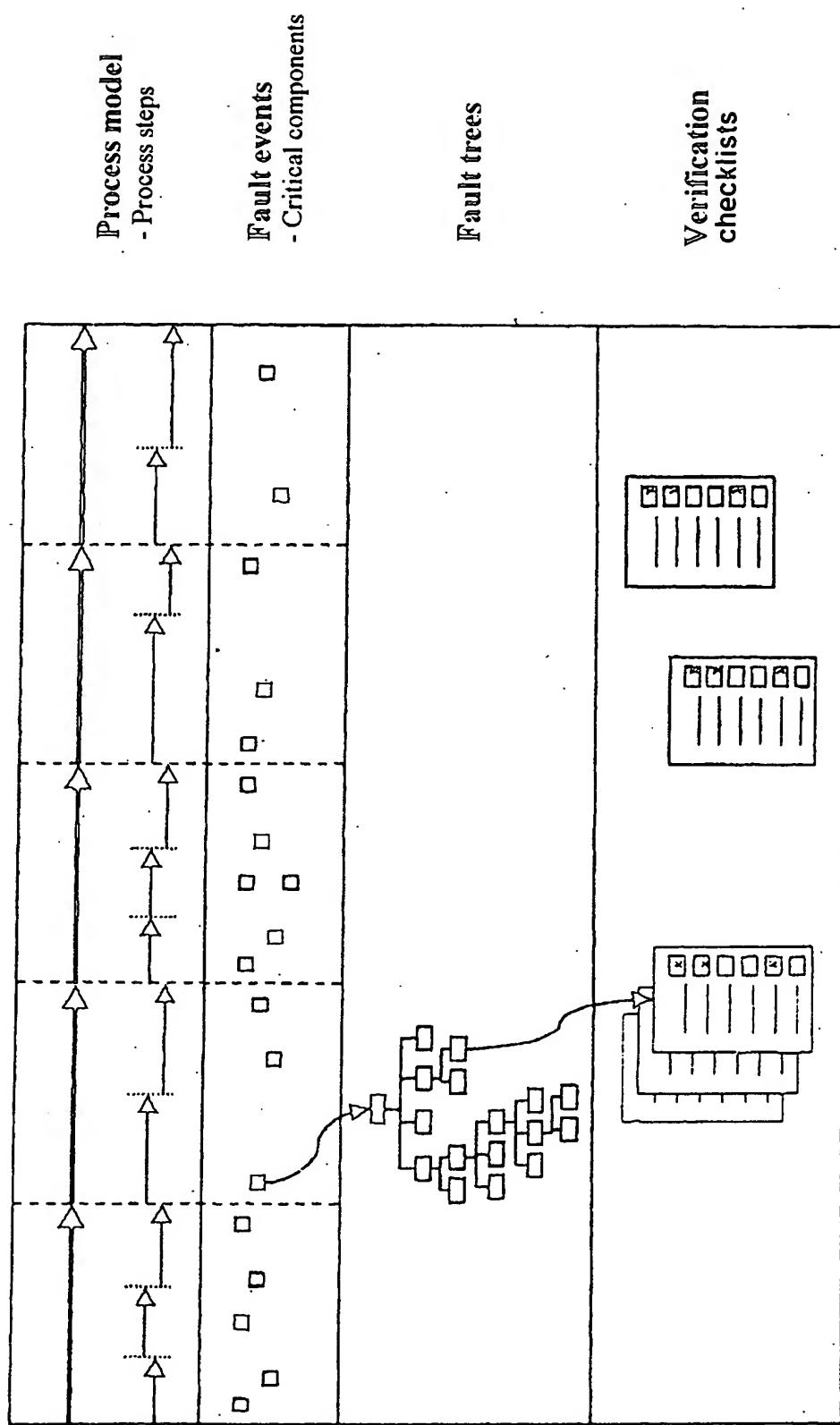


Fig. 4

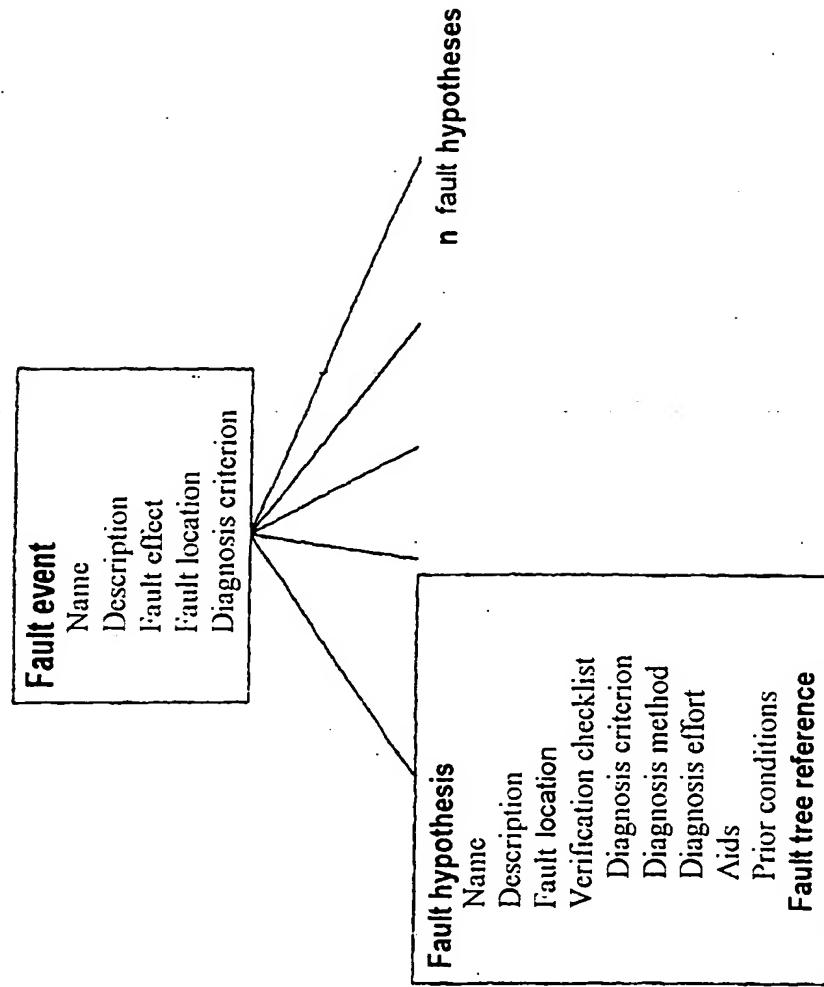


Fig. 5

<b>Fault hypothesis – Power supply too high</b>	
<b>Description</b>	An overpressure in the reactor can be caused by an excessively high power supply.
<b>Localization</b>	Continuously stirring reactor XY
<b>Verification checklist</b>	
<b>Valve not open?</b>	Diagnosis method: ... Diagnosis effort: low
<b>Temperature measurement fault?</b>	Diagnosis method: physical model Diagnosis effort: automatically verified
<b>Incorrect operating instructions?</b>	Diagnosis method: ... Diagnosis effort: average
<b>Leakage to the cooling casing?</b>	Diagnosis method: physical model Diagnosis effort: automatically verified
<b>Fault tree reference</b>	Incorrect operating instructions

Fig. 6

<b>Fault hypothesis – Power supply too high</b>	
<b>Description</b>	An overpressure in the reactor can be caused by an excessively high power supply.
<b>Localization</b>	Continuously stirring reactor XY
<b>Verification checklist</b>	
<b>Valve not open?</b>	
Diagnosis method: ...	
Diagnosis effort: low	
<i>Temperature measurement fault excluded!</i>	
Diagnosis method: physical model	
Diagnosis effort: automatically verified	
<b>Incorrect operating instructions?</b>	
Diagnosis method: ...	
Diagnosis effort: average	
<b>Leakage to the cooling casing!</b>	
Diagnosis method: physical model	
Diagnosis effort: automatically verified	
<b>Fault tree reference</b>	
Incorrect operating instructions	

Fig. 7